

The Japanese Village at the Nevada Test Site

A Relic of Nuclear War

Cold War material culture studies have focused on military developments representing 20th-century weaponry. This article describes a unique group of structures with an entirely different purpose, the Japanese Village on the Nevada Test Site. Located on the grounds of the main U.S. nuclear weapons testing facility, an international program constructed the village to study radiation effects and, ultimately, to aid the survivors of Hiroshima and Nagasaki. Resembling an “eastern version of a western movie set,” it stands as a memorial to the only combat use of nuclear weapons.¹

The Japanese Village stands on a gently sloping rise in an area known as Yucca Flat. The structures are on a stabilization area delineated from the surrounding desert by slight berms on three sides and an excavated revetment on the fourth. Two skeletal frame structures and a Hollywood-set style wall elevation are all that remain. A third structure and two additional elevations have collapsed. Constructed primarily of lumber with plywood floors, their original cement-asbestos board cladding is long gone. Each rests on wooden skids, intended to permit portability.

The rectangular structures simulate typical Japanese dwellings. The larger of the two originally had two stories, but its second story has since collapsed. The other has one story with a gable roof. Original construction drawings identify interior spaces as lobby, living room, kitchen, closet, and a

room called a *toko*, a raised alcove for displaying hanging scrolls or flower arrangements. These room divisions roughly correspond to modules of standard tatami mats, the preferred flooring material. Nearby features include a concrete foundation that originally held a skeletal steel tower (subsequently moved to another part of the Test Site). A second 200' x 200' stabilization area, empty of structures, lies 750' to the east.

On July 16, 1945, the U. S. detonated the first atomic weapon, Trinity, near Alamogordo, New Mexico. Its successful detonation led to immediate plans for combat use; and in less than three weeks, a nuclear weapon was exploded over Hiroshima, Japan. Three days later, a second nuclear weapon fell on Nagasaki. On August 15, 1945, Japan surrendered, ending World War II. The death toll has been estimated at more than 200,000 between the two cities. Additional deaths within five years added another 130,000, with many more victims suffering long-term radiation effects.²

Japanese survey teams immediately began studying the effects of the atomic weapons on their urban populations. By the end of August, relief measures were underway as were efforts to investigate all aspects of the bombs effects. In 1947, the U.S. established the Atomic Bomb Casualty Commission (ABCC), a permanent medical survey-research organization with offices in Hiroshima and Nagasaki.³ The ABCC continues its work as the Radiation Effects Research Foundation, a private nonprofit Japanese foundation supported jointly by the U.S. and Japan. It documents and analyzes the effects of nuclear radiation on the bomb survivors and their offspring.

Cooperation between the medical sections of these groups was excellent, but the groups working on physical damage did not try to reconcile differences between their measurements and calculations of the height and location of bomb bursts (i.e., the hypocenters). Such differences resulted in considerable problems for determining the radiation-dose calculations (dosimetry) of each survivor. In particular, the shielding effects of buildings were largely unknown, although records showed that many survivors were in their houses when the bombs fell. Thus, the ABCC determined that a study of the survivors who were in their

Recent photo of Japanese Village courtesy U.S. Dept. of Energy.





Historic photo of Japanese Village courtesy U.S. Dept. of Energy.

houses and the shielding characteristics of these structures could yield substantial information on survivor dosimetry.⁴

The survey group's recommendations led to the establishment of a program in 1956 known as Ichiban (the Japanese word for "number 1" or "best"). The program documented survivor location at the instant the bombs exploded, established air-dose curves, and analyzed shielding factors for houses. Ichiban included several nuclear weapon tests, many laboratory experiments, physical surveys in Japan, calculation studies, and a series of experiments known as Operation BREN (Bare Reactor Experiment, Nevada). BREN focused on determining shielding characteristics of Japanese-style houses and resulted in what we now call Japanese Village.

ABCC studies were used to develop these "analog" houses. Plans of rooms drawn during interviews with bomb victims and measurements of structures at varying distances from the bomb's hypocenters contributed to their design. Room

sizes were based upon the dimensions of tatami mats, as was typical with Japanese dwellings. Given this uniformity, researchers found that three types represented 90% of all Japanese residential structures; a large two-story, a middle-sized single-story, and a small one-story. Studies comparing radiation-attenuation characteristics of Japanese building materials with U.S. products identified a cement-asbestos board known as "transite" as a suitable

substitute for the traditional Japanese mud and oyster-shell stucco.

The Operation BREN concept developed from a need for information on neutron and gamma radiation fields and their ability to penetrate buildings. An open reactor was placed on a hoist car mounted on a tower. Three analog Japanese houses and three wall elevations were placed 2,250' from the base of the tower. Each house contained sophisticated dosimetry devices placed strategically throughout the rooms. These measured radiation rates and allowed researchers to calculate the dosimetry of bomb survivors. The BREN experiments were conducted during the spring and early summer of 1962. Upon completion, the tower was moved and used for other experiments; but the wooden structures and other features remain in their original location.

The tragic loss of life and long-term health effects suffered by the survivors of the Hiroshima and Nagasaki bombings are perhaps the main reason that an all-out nuclear exchange never occurred during the Cold War. Japanese Village stands as testament to profound tragedy and, conversely, international cooperation for humanitarian purposes. Data obtained from the BREN studies helped the Japanese survivors of Hiroshima and Nagasaki by providing information to their medical practitioners. This data was also used to determine health effects from radiation and, presumably, helped the U.S. to establish safety levels for radiation workers. Given its significance, Japanese Village was designated a National Register-eligible property. Its fragile nature led to Historic American Building Survey (HABS) documentation. Stabilization efforts were enacted, and the site still stands. However, security restrictions have limited access.

Notes

- ¹ Commentary by John Rhys-Davies in *Return to Ground Zero*, New Dominion Pictures, Learning Channel Archeology Series.
- ² R. Rhodes, *The Making of the Atomic Bomb*, New York, 1986.
- ³ J.A. Auxier, *Ichiban*, CEX-64.3 Civil Effects Study, 1964.
- ⁴ Ibid.

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